

SE Series Lower Power Solenoid Valve

40 to 60 ℓ /min
10 to 16MPa



Features

① Low current, low power

The SE series magnetic switching valve's solenoid has significantly lower power consumption.

② Directly drivable by a programmable controller

Low-current operation means not only allows direct drive by a programmable controller (PC) output circuit, it also enables the use of a compact and simple control circuit.

③ Little coil temperature rise

Low power operation means there is little heat generated from the coil, which minimizes the effects of heat on mechanisms. Even with the AC solenoid, there is little chance of coil burnout.

④ With M12-4 pin connector (option)

Makes it easier to interface with open networks like Device Net. This connector streamlines wiring work. The diode

for preventing current back surge is built in to the terminal box to protect the slave unit connection. (With M12-4 pin connector)

⑤ Global compliance (G01 size)

Meets overseas safety standards TÜV (CE marking). Can be used safely around the world.

Specifications

| Operation Symbol | JIS Symbol | SE-G01-**-*(G)R-**-40 | | SE-G03-**-*(J) 30 | |
|------------------|------------|--|--|--|--|
| | | Rated Flow Rate - Maximum Flow Rate ℓ /min | Maximum Working Pressure MPa(kgf/cm ²) | Rated Flow Rate - Maximum Flow Rate ℓ /min | Maximum Working Pressure MPa(kgf/cm ²) |
| A2X | | 30 | 16 {163} | 40 | 10 {102} |
| A3X | | | | 50 | |
| H3X | | 40 | — | — | — |
| E3X | | 30 | 16 {163} | 50 | 10 {102} |
| C4 | | | | 60 | |
| C5 | | | | 40 | |
| C6 | | | | 40 | |

Note) The maximum flow rate of each valve depends on the pressure. For details, see page E-29.

● Handling

- In order to realize the full benefits of the solenoid valve, configure piping so oil is constantly supplied to the T(DR) port.
- Ensure that surge pressure in excess of the maximum allowable back pressure can be accidentally at the T port.

- Note that the maximum flow rate is limited when used as a four-way valve, or by blocking ports for use as a two-way valve or one-way valve.
- Always keep the operating fluid clean. Allowable contamination is class NAS12 or less.

● Solenoid Assembly Specifications

| Solenoid Type | Power Supply Type | Voltage (V) | Frequency (Hz) | For SE-G01 | | | | For SE-G03 | | | |
|----------------------------|-------------------|-------------|----------------|--------------------|---------------------|-------------------|-----------------------------|--------------------|---------------------|-------------------|-----------------------------|
| | | | | Solenoid Coil Type | Holding Current (A) | Holding Power (W) | Allowable Voltage Range (V) | Solenoid Coil Type | Holding Current (A) | Holding Power (W) | Allowable Voltage Range (V) |
| Built-in rectifier type AC | E1 | AC100 | 50 | EED64-E1 | 0.08 | 7.0 | 80 to 120 | SLH1-03B-R1-01 | 0.06 | 5.8 | 80 to 120 |
| | | | 60 | | | | | | | | |
| DC | D2 | DC24 | — | EED64-D2 | 0.2 | 4.8 | 21.6 to 26.4 | SLH1-03B-D2-01 | 0.2 | 4.8 | 21.6 to 26.4 |

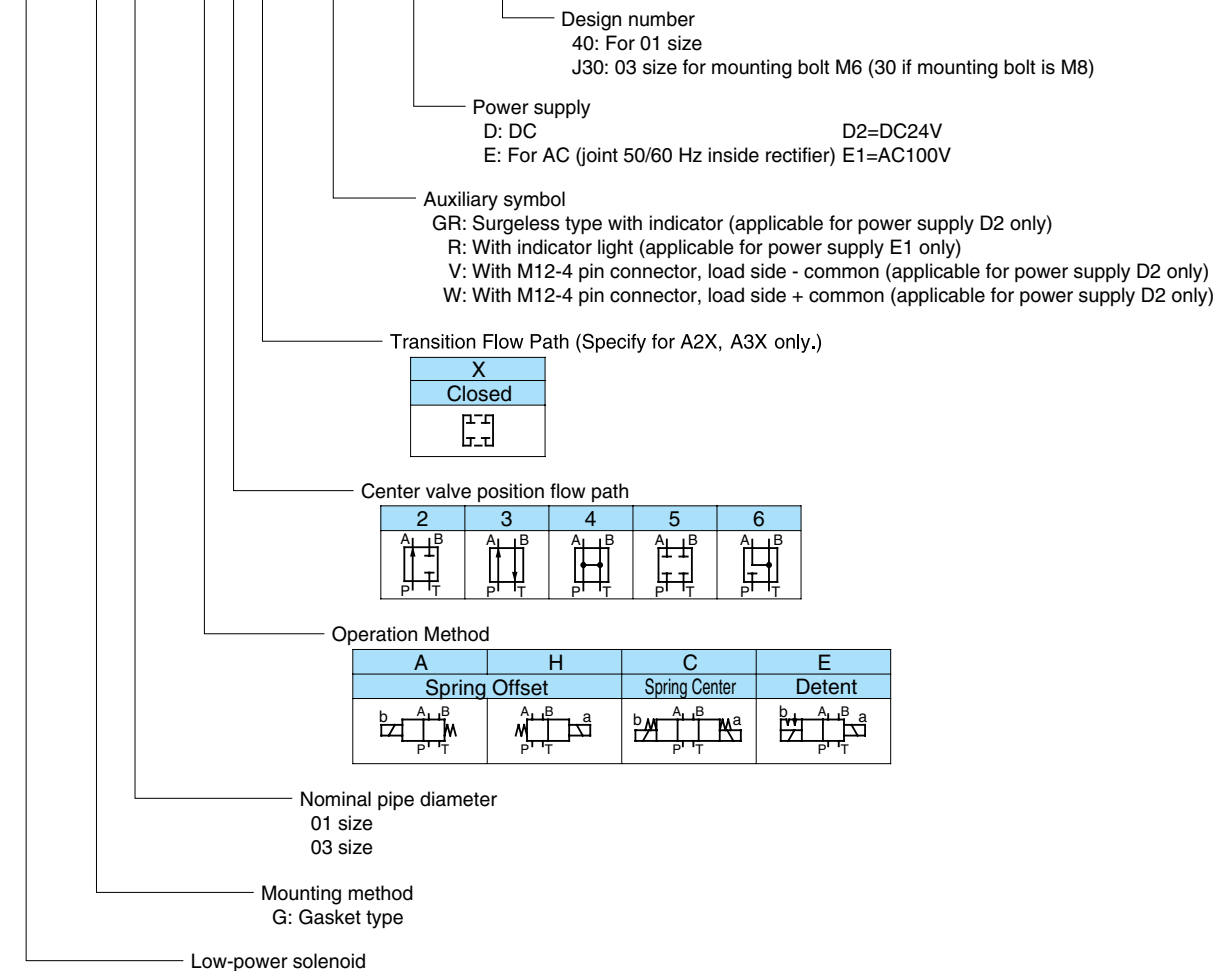
- When using petroleum type operating fluid, use JIS K 2213 Class 1 or Class 2, or equivalent.
- Use the SS series solenoid valve if using flame resistant operating fluid.
- Be sure to note the allowable pressure range of the coil being used.
- Maintaining a switching position under high pressure for a long period can cause abnormal operation due to hydraulic lockup. Contact your agent when you need to maintain a switching position for a long period.
- When using a detent type (E3X), provide constant energization when secure maintenance of the switching position is required.
- Note that manual pin operating pressure changes in accordance with tank line back pressure.
- If you do not select the option with the M12-4 pin connector, current back surge may occur because there is no solenoid in the central terminal box. Therefore, install solenoid valves to protect against current back surge on both ends of the coil in the output circuit of the programmable controller (PC) if directly operating the solenoid valves. (Recommended diode: Hitachi V07J or equivalent)

| Solenoid Type | | SE-G01 | | SE-G03 | |
|-----------------------------------|---------------------------------------|---|------------------------------------|--|------------------------------------|
| | | DC Solenoid | Internal DC solenoid for rectifier | DC Solenoid | Internal DC solenoid for rectifier |
| | | D2 | E1 | D2 | E1 |
| Maximum Working Pressure | P, A, B Ports | 16MPa {163kgf/cm ² } | | 10MPa {102kgf/cm ² } | |
| Maximum Allowable Backpressure | T port | 16MPa {163kgf/cm ² } | | 10MPa {102kgf/cm ² } (In the case of 2MPa {21kgf/cm ² } operation symbol E3X) | |
| Changeover Frequency (per minute) | | 120 | | 120 | |
| Standard | Indicator light Surgeless | GR | R | GR | |
| Weight (kg) | Double Solenoid | 2.2 | | 3.5 | |
| | Single Solenoid | 1.7 | | 3.3 | |
| Operating Environment | Dust Resistance/Water Resistance Rank | JIS C0920 IP64 (Dust-tight, Splash proof) | | JIS C0920 IP65 (Dust-tight, Waterjet-proof) | |
| | Ambient Temperature | -20 to 50°C | | -10 to 50°C | |
| | Operating Fluid Temperature Range | -20 to 70°C | | 0 to 65°C | |
| | Operating Fluid Viscosity Range | 15 to 300mm ² /s | | | |
| | Operating Fluid Filtration | 25 microns or less | | | |
| Bundled Accessories | Mounting bolt | Refer to page D-93 for bolt lengths for usage of M5 x 45 4-module valves. | | Refer to page E-29 for bolt lengths for usage of M6 x 40 (M8 x 40) 4-module valves. | |
| | Tightening Torque | 5 to 7N·m {51 to 71kgf·cm} | | M6 10 to 13N·m {102 to 133kgf·cm} M8 18 to 21N·m {184 to 214kgf·cm} | |

Note) For mounting bolts, use 12T or equivalent.

Understanding Model Numbers

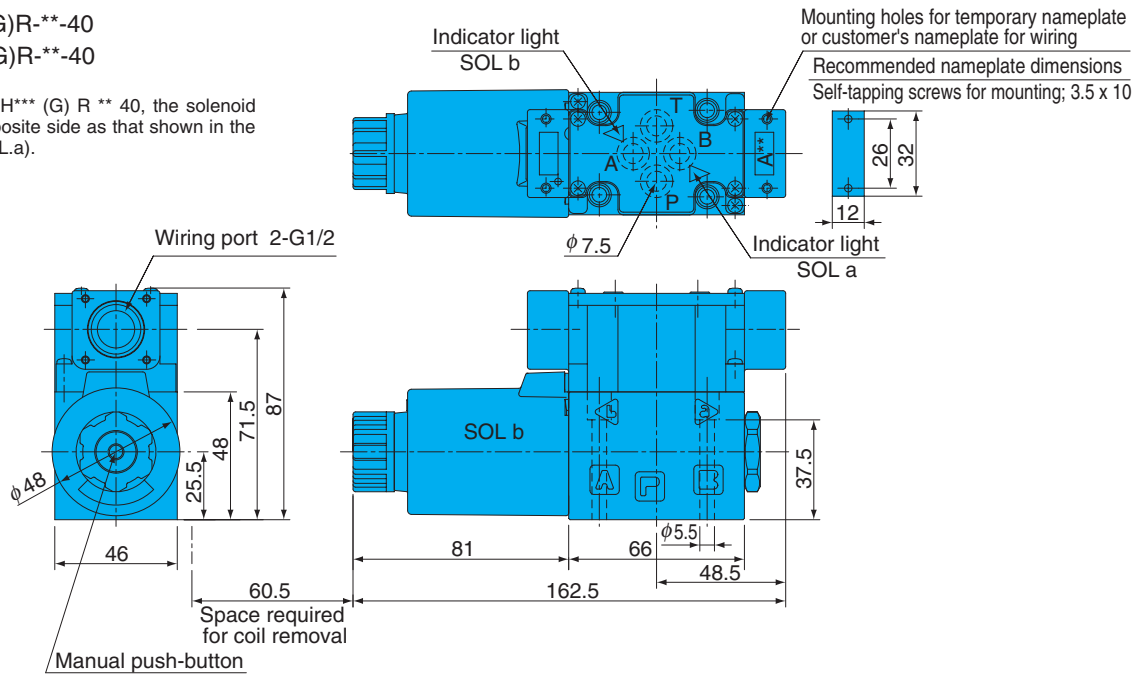
SE - G 03 - A 3 X - GR - C2 - J30



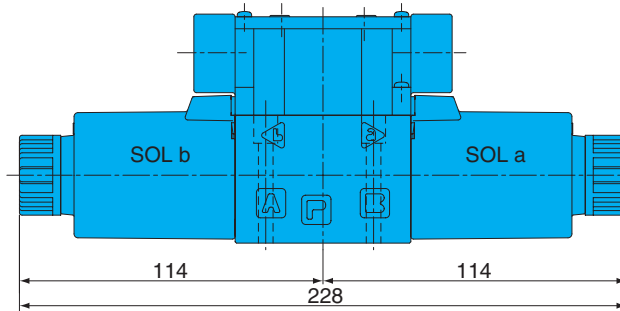
Installation Dimension Drawings

SE-G01-A***-(G)R**-40
SE-G01-H***-(G)R**-40

Note) For SE-G01-H*** (G) R ** 40, the solenoid is on the opposite side as that shown in the diagram (SOL.a).

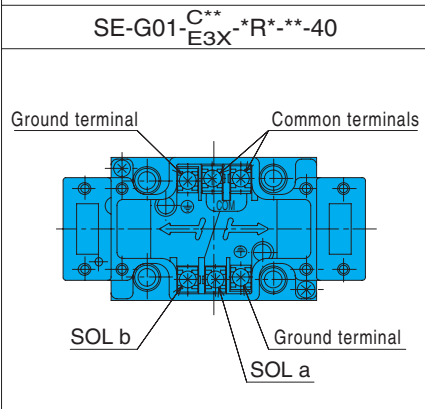
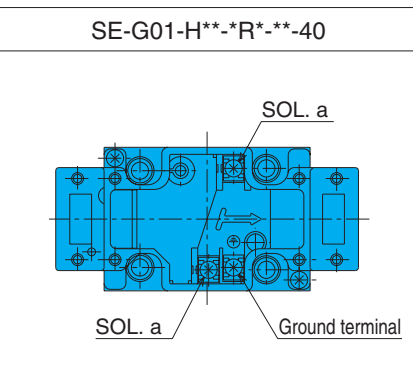
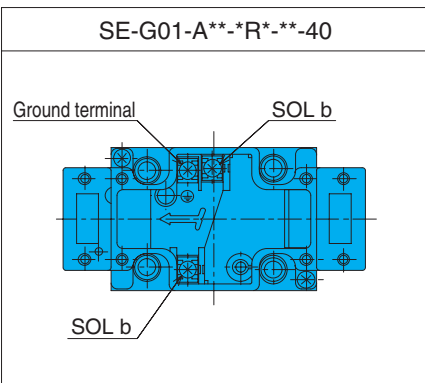


SE-G01-C**-(G)R**-40
SE-G01-E3X-(G)R**-40

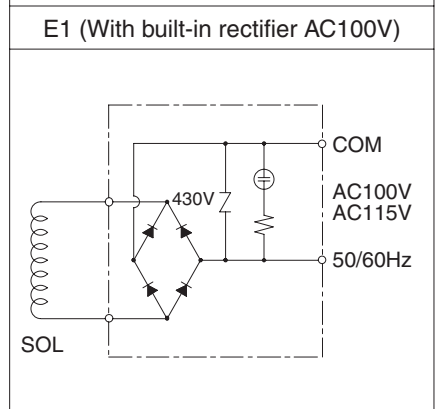
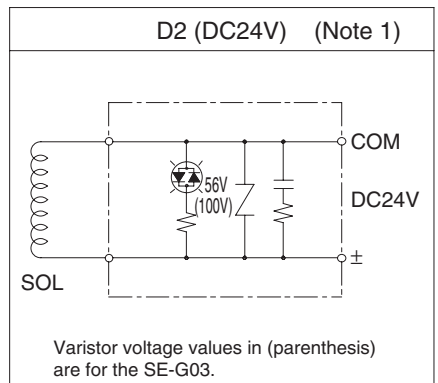


Note) Gasket surface dimensions and sub plate are the same as those for SS-G01. See page E-5 for more information.

Wiring diagram for central terminal box kit

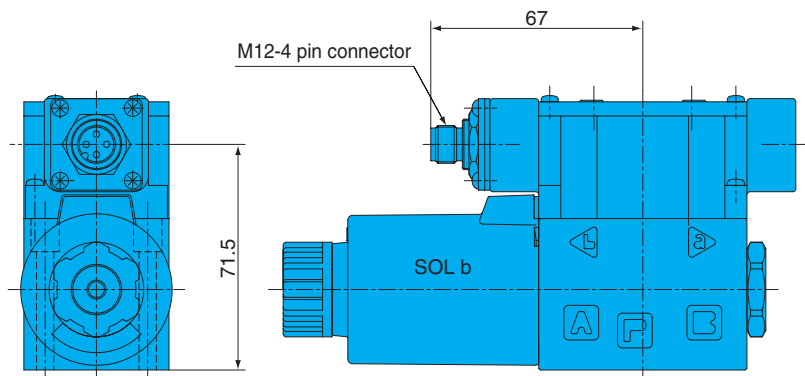
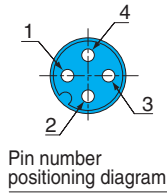


Electrical circuit diagram for central terminal box kit



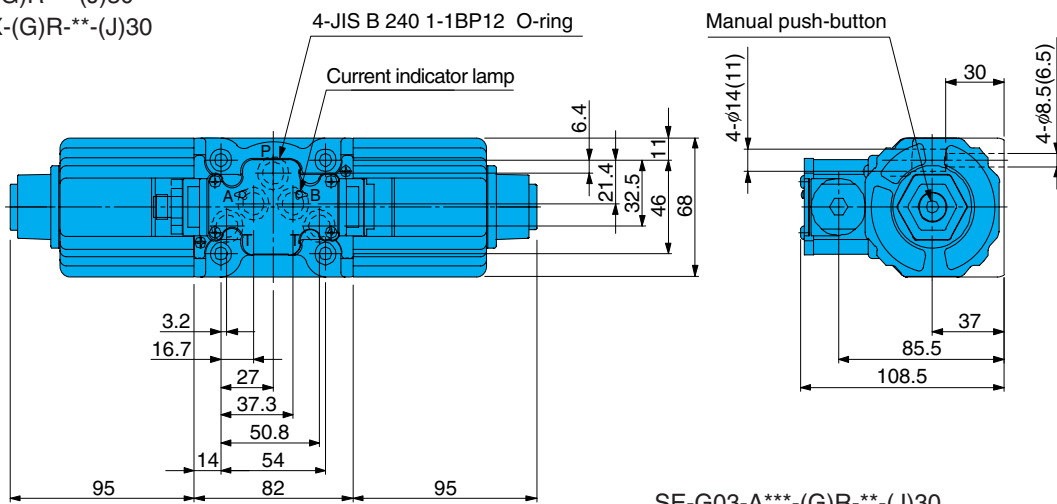
Note 1) Install D2 specification solenoid valves to protect against current back surge on both ends of the coil in the output circuit of the programmable controller (PC) if directly operating the solenoid valves.

With M12-4 pin connector
 SE-G01-**-GRV-D2-40
 SE-G01-**-GRW-D2-40

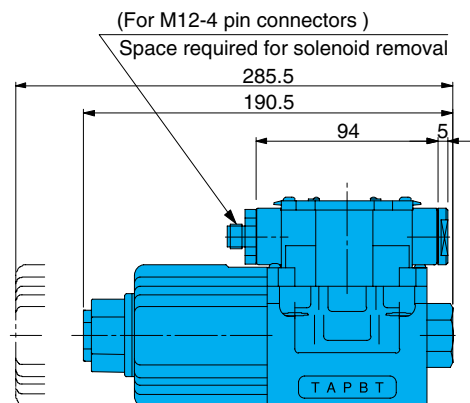
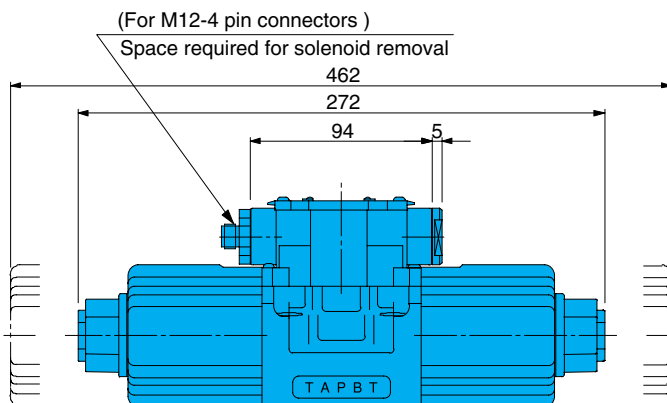


| | M12-4 pin connector | Electrical Circuit Diagram |
|--------|--|---|
| Type V | <p>1: Not used 2: SOL a 3: COM (-) 4: SOL b</p> | <p>Terminal box / Short circuit equipment</p> |
| Type W | <p>1: COM (+) 2: SOL a 3: Not used 4: SOL b</p> | <p>Terminal box / Short circuit equipment</p> |

SE-G03-C*-(G)R-**(J)30
 SE-G03-E3X-(G)R-**(J)30



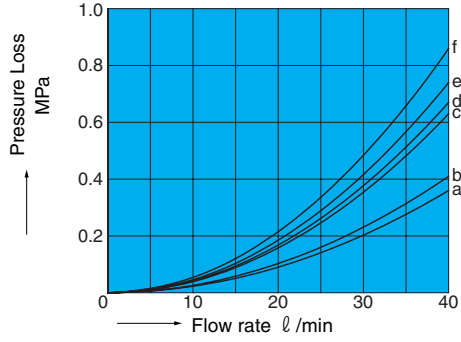
SE-G03-A***-(G)R-**(J)30



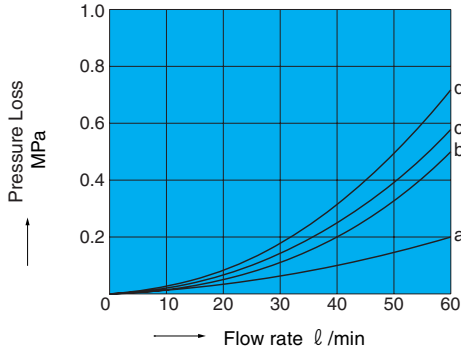
Performance Curves

Differential Hydraulic Fluid Viscosity 32mm²/s

Pressure Loss Characteristics



| Pump Type | Flow Path | P→A | P→B | A→T | B→T | P→T |
|-----------|-----------|-----|-----|-----|-----|-----|
| SE-G01 | A2X | d | f | — | — | — |
| | A3X | f | f | e | e | — |
| | H3X | f | f | e | e | — |
| | E3X | c | c | e | e | — |
| | C4 | b | b | b | b | d |
| | C5 | e | e | d | d | — |
| C6 | f | f | a | a | — | |



| Pump Type | Flow Path | P→A | P→B | A→T | B→T | P→T |
|-----------|-----------|-----|-----|-----|-----|-----|
| SE-G03 | A2X | d | d | — | — | — |
| | A3X | d | d | d | d | — |
| | E3X | d | d | c | c | — |
| | C4 | c | c | a | a | b |
| | C5 | d | d | d | d | — |
| | C6 | d | d | b | b | — |

Pressure - Flow Volume Allowable Value

| Pump Type | SE-G01 | | | SE-G03 | | |
|-----------|-------------------|------------------|------------------|-------------------|------------------|------------------|
| | Operation Example | Operation symbol | Operation symbol | Operation Example | Operation symbol | Operation symbol |
| A2X | | — | D | | — | A |
| A3X | | A | D | | C | A |
| H3X | | A | D | | — | — |
| E3X | | A | C | | D | C |
| C4 | | C | C | | F | C |
| C5 | | A | D | | A | B |
| C6 | | B | D | | A | B |

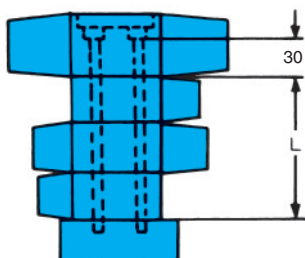
| Flow rate (l/min) | Pressure (MPa) | Point |
|-------------------|----------------|-------|
| 0 | 0 | A |
| 10 | 4 | B |
| 16 | 10 | C |
| 10 | 22 | D |

| Flow rate (l/min) | Pressure (MPa) | Point |
|-------------------|----------------|-------|
| 0 | 0 | A |
| 6 | 5 | B |
| 10 | 10 | C |
| 8 | 25 | D |
| 6 | 35 | E |
| 4 | 35 | F |

Note) 1. The maximum flow rate is the value when a rated 90%V is applied following solenoid temperature rise and saturation.
2. The maximum flow rate is the allowable value of each port.

Installation bolts

Refer to the following table for length of installation bolts for SE-G03 size. (Refer page D-93 for length of installation bolts for SE-G01 size.)

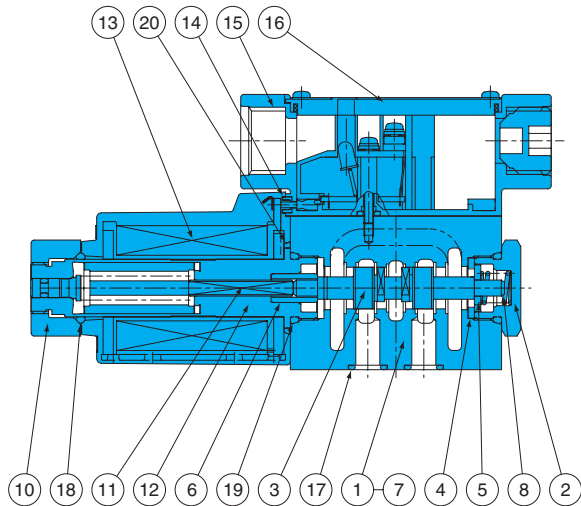


| Type | Dimensions L | Bolt length |
|--------------------------|-------------------|-------------|
| Hexagon socket head bolt | 0 (Solenoid only) | 40 |
| | 55 | 95 |
| | 110 | 150 |

| Type | Dimensions L | Bolt length |
|-----------|--------------|-------------|
| Stat bolt | 55 | 105 |
| | 90 | 140 |
| | 110 | 160 |
| | 145 | 195 |
| | 165 | 215 |
| | 200 | 250 |
| | 220 | 270 |

Cross-sectional Drawing

SE-G01-A3X-(G)R-**-40



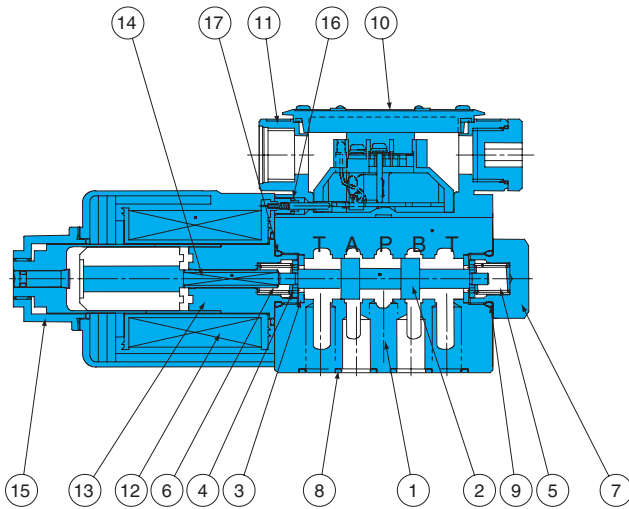
| Part No. | Part Name |
|----------|------------------|
| 1 | Body |
| 2 | Plug |
| 3 | Spool |
| 4 | Retainer A |
| 5 | Retainer B |
| 6 | Spring pin |
| 7 | Spacer |
| 8 | Spring A |
| 9 | Spring C |
| 10 | Nut |
| 11 | Rod |
| 12 | Solenoid guide |
| 13 | Solenoid coil |
| 14 | Packing |
| 15 | Terminal box kit |
| 16 | Nameplate |
| 17 | O-ring |
| 18 | O-ring |
| 19 | O-ring |
| 20 | O-ring |

List of Sealing Parts

| Part No. | Part Name | SE-G01 | | |
|----------|-----------|-----------------|-----------------|-----------------|
| | | Part Number | Q'ty | |
| | | | Single Solenoid | Double Solenoid |
| 17 | O-ring | AS568-012(HS90) | 4 | 4 |
| 18 | O-ring | 1A-P18 | 1 | 2 |
| 19 | O-ring | 1B-P18 | 2 | 2 |
| 20 | O-ring | S-25 | 1 | 2 |

Note) O-ring 1A-** and 1-B** indicate JIS Standard B 2401-1A-** and 1B-**.

SE-G03-A3X-GR-**- (J)30



| Part No. | Part Name |
|----------|------------------|
| 1 | Body |
| 2 | Spool |
| 3 | Spacer |
| 4 | Holder |
| 5 | Spring |
| 6 | Spring |
| 7 | Plug |
| 8 | O-ring |
| 9 | O-ring |
| 10 | Nameplate |
| 11 | Terminal box kit |
| 12 | Solenoid coil |
| 13 | Solenoid guide |
| 14 | Rod |
| 15 | Nut |
| 16 | O-ring |
| 17 | O-ring |

List of Sealing Parts

| Part No. | Part Name | SE-G03 | | |
|----------|-----------|-------------|-----------------|-----------------|
| | | Part Number | Q'ty | |
| | | | Single Solenoid | Double Solenoid |
| 8 | O-ring | 1B-P12 | 5 | 5 |
| 9, 17 | O-ring | 1B-P18 | 2 | 2 |
| 16 | O-ring | 1A-P3 | 2 | 4 |

Note) O-ring 1A-** and 1-B** indicate JIS Standard B 2401-1A-** and 1B-**.

Seal Kit Number

| SE-G01 | | SE-G03 | |
|-----------------|-----------------|-----------------|-----------------|
| Single Solenoid | Double Solenoid | Single Solenoid | Double Solenoid |
| EEDS-01A | EEDS-01C | EECS-03A | EECS-03C |